

In the Claims

The following amendments are made with respect to the claims in the international application PCT/GB2004/003086 attached as Annexes to the International Preliminary Report on Patentability (IPRP). Therefore, please replace existing pages 17 and 18 of the international application with the amended claim sheets (replacement pages 17, 18, and 19) of the annex attached to the IPRP, and make the following amendments to the pending claims so that they read as follows:

We claim:

Claim 1 (Currently amended): A method for monitoring the amplification of a plurality of different target polynucleotides in a single reaction chamber, comprising ~~the steps of:~~

(i) carrying out a reaction for the amplification of a plurality of different target polynucleotides;

(ii) during the amplification reaction, contacting different amplified products with a molecule that binds to or interacts with a polynucleotide, the molecule being located in a spatially defined position or being determined via a non-linear or non-fluorescent technique; and

(iii) detecting the interaction between the amplified product and the molecule by measuring changes in applied radiation.

Claim 2 (Currently amended): ~~A~~ The method according to claim 1, wherein the molecule is ~~immobilised~~ immobilized to a support material.

Claim 3 (Currently amended): ~~A~~ The method according to claim 1 ~~or claim 2~~, wherein the molecule is a polymerase enzyme.

Claim 4 (Currently amended): ~~A~~ The method according to claim 1 ~~or claim 2~~, wherein the molecule is a polynucleotide, at least a portion of which is complementary to a region on an amplified product.

Claim 5 (Currently amended): ~~A~~ The method according to claim 4, wherein the molecule acts as a primer for the amplification reaction.

Claim 6 (Currently amended): ~~A~~ The method according to claim 4, wherein the molecule does not act as a primer for the amplification reaction.

Claim 7 (Currently amended): ~~A~~ The method according to ~~any preceding claim~~ claim 1, wherein ~~detection in step (iii)~~ the detecting is carried out by detection of an evanescent field.

Claim 8 (Currently amended): ~~A~~ The method according to ~~any preceding claim~~ claim 1, wherein ~~detection the detecting in step (iii)~~ the detecting is carried out by applying surface electromagnetic waves and monitoring changes in the waves.

Claim 9 (Currently amended): ~~A~~ The method according to claim 7 ~~or claim 8~~, wherein ~~detection the detecting~~ the detecting is carried out by measuring changes in surface plasmon resonance.

Claim 10 (Currently amended): ~~A~~ The method according to claim 9, wherein the molecule comprises a metallic particle.

Claim 11 (Currently amended): ~~A~~ The method according to ~~any of claim 1-6~~ claim 1, wherein ~~detection in step (ii)~~ the detecting is carried out by detecting surface enhanced Raman scattering.

Claim 12 (Currently amended): ~~A~~ The method according to ~~any of claims 4-6~~ claim 4, wherein ~~detection in step (ii)~~ the detecting is achieved by detecting an intercalating label that binds to the hybrid formed between the amplified product and polynucleotide during the amplification reaction.

Claim 13 (Currently amended): ~~A~~ The method according to claim 12, wherein the intercalating label is fluorescent when bound to the hybrid.

Claim 14 (Currently amended): ~~A~~ The method according to ~~any of claims 1-6~~ claim 1, wherein ~~detection in step (iii)~~ the detecting is achieved by monitoring changes in electrical conductance and/or capacitance.

Claim 15 (Currently amended): ~~A~~ The method according to ~~any preceding claim~~ claim 1, wherein the amplification reaction occurs in a sealed micro-flow cell.

Claim 16 (Currently amended): ~~Apparatus~~ An apparatus for monitoring a polynucleotide amplification reaction, comprising a support material having a plurality of molecules ~~immobilised~~ immobilized thereon, the molecules having the ability to bind to or interact with a polynucleotide, and means for detecting changes in applied radiation.

Claim 17 (Currently amended): ~~An~~ The apparatus according to claim 16, further comprising a sealed micro-flow cell.

Claim 18 (Currently amended): ~~An~~ The apparatus according to claim 16 ~~or claim 17~~, further comprising a pump to maintain a flow of fluid over the support material.

Claim 19 (New): The apparatus according to claim 17, further comprising a pump to maintain a flow of fluid over the support material.